Milwaukee Solvay Coke and Gas Site, Alternatives Screening Technical Memorandum					
Comment Number	**Agency**	**Report Section**	**Page**	**Paragraph**	**Comment**
1	Weston	1.2	2		The introductory paragraph should be clear that the Site is both upland and the adjacent river. The site source(s) should also be identified in the introductory paragraph (i.e., MGP, coal, tannery).
2	Weston	1.2	2		The current surrounding land use should be discussed, for example the U of Milwaukee campus building is a surrounding land use that is not industrial. It is located at 600 Greenfield.
3	Weston	1.4	4	last	Discuss the width of the sediment shelves. Disagree with text as it implies that other non-site related sources are cause of sediment in shelves. The text needs to be revised, such as "These deposits are the result of the accumulation of sediments and constituents from historic site operations, with contributions from numerous upstream and nearby point and non-point sources including the contaminated sediment within the Restoration Area."
4	Weston	1.4	4		The text states that the sediment shelves are truncated at the Turning Basin; however, Figure 1.3 shows a Navigational Channel and sediment shelves at and downstream of the Turning Basin.
5	Weston	**2**	General		The abbreviated summary of the RI Report is lacking pertinent information. The RI summary for the Feasibility Study report should include a Conceptual Site Model update, full summary of nature and extent and risks as a stand alone document rather than referencing back to figures in the RI Report. The reader should be able to understand the site COPCs and COCs based on human health, ecological, and migration to groundwater exposure pathways and the complete and incomplete pathways.
6	Weston	2.0	5		Summarize the sampling approach; how many wells; how many rounds; quarterly, annually, etc. The RI summary should detail the sampling approach including decisions where samples were not collected.
7	Weston	2.0	5		Describe the upland field observation sampling approach used to evaluate the presence of other fill materials (coal, coke, cinders, slag, clinker) and potentially mobile NAPL at the Site and that these activities were performed to identify potential principal threat waste (NAPL) and potential low level threat waste (fill). Also note that the sampling approach intentionally excluded stockpile/NAPL bleb, etc. sampling for laboratory analysis.
8	Weston	2.0	5		Provide citations for the site documents (e.g., RI/FS work plan, QAPP, etc.). Provide citation for DQO statement.
9	Weston	2.1.1	7	last	Provide citations for the "investigations completed by others".
10	Weston	2.2	8		The nature and extent section does not discuss the migration to groundwater pathway and identified COCs.
11	Weston	2.2.1.1	8		Describe what blue staining indicates; the text as written implies it requires cleaning up just because of a color. Also Section 4.4.1.1.3; the blue stained soil section should include a discussion of why the blue stained soil is an environmental concern. Section 4.1.7, page 4-18 in the RI states "The highest concentrations of cyanide were observed in the upper inch of the two small blue stained soil areas at CG-SB53 and FT-SB27." Include a summary of cyanide sampling and results and area and associated volume of contamination.
12	Weston	2.2.1	8		Discuss that field observations are used to identify area of potential principal threat waste (i.e., NAPL) and potential low level threat waste process residuals/other fill/stockpiles). The soil section should include a discussion of why NAPL and process residuals are an environmental concern. Similar to discussion in Section 4.1.1 of the RI Report.
13	Weston	2.2.1.1	9		The nature and extent summary should discuss all COPCs in the RI, not just primary constituents.
14	Weston	2.2.1.2	9		The text should discuss NAPL recovery at monitoring well MW-07.

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15	Weston	2.2.1.2	9		The nature and extent summary should discuss all COPCs in the RI. Discuss other contaminants that exceeded the MCL or ES.
16	Weston	2.3	11		The text needs to list the COCs identified in the HHRA for each media, each area, each receptor, not simply discuss primary contaminants.
17	Weston	2.3	11	last	The text states, "Further indoor air exposures would be mitigated with the use of vapor barriers in future construction of onsite residences, if needed." The alternatives should present exposure pathway and potential remedial options.
18	Weston	2.3	11		The groundwater discharge to surface water pathway needs to be discussed.
19	WDNR	3	14		Wisconsin typically accepts risk at 10-6, not 10-5, unless there are attenuating factors, as in the case of vapor intrusion.
20	Weston	3	14		Target levels for PRGs should be based on cumulative risk, not set at target risk level for each COC.
21	Weston	3	14		Also list cyanide as "constituent" in surface soil and subsurface soil, and develop a PRG for cyanide. Cyanide was listed as a COPC in subsurface soil (Section 4.23 in RI Report), and elevated cyanide was measured in subsurface soil.
22	Weston	3	14		Add all COCs as constituents for appropriate media. For example, benzene posed a risk of 1E-06 in surface/subsurface soil to the on-site commercial/industrial worker for the outdoor air pathway in the CG/CS Area per Table 9.7 of Appendix Y of the RI. A PRG needs to be developed for benzene.
23	Weston	3	14		Fill up to 24 ft deep is discussed in the RI (Section 4.1.1.1). Subsurface soil should be listed as a medium with fill listed as a constituent.
24	Weston	3	14		The potential receptors identified in the risk assessment should be listed for groundwater. The term "none expected" needs to be defined.
25	Weston	3	14		Separate Surface from Subsurface as the soil medium. Surface soil depth and subsurface soil depth need to be defined on the RAO table. ARARs state surface soil is 4-feet.
26	Weston	3	14		"Blue Staining" is not a constituent, change to cyanide.
27	Weston	3	15		COCs in groundwater also include carcinogenic PAHs, ethylbenzene, cyanide, and iron. Need to clarify why they are not listed or identify them all as COCs.
28	WDNR	3.0	15	RAO 1	Wisconsin does not prohibit properties from being used for residential purposes. We can apply institutional controls that restrict the use of a property to Industrial or other use, depending on clean up levels.
29	Weston	3	15	RAO 1	Remove this RAO; it is not acceptable. The remedial objective for a site is to restore it for future use, not to restrict use.
30	Weston	3	15	RAO 1	The RAO should include the residential receptor, COCs, and PRGs. Institutional controls can be used to attain this RAO. The institutional control should also restrict other uses (development of the property including housing, elementary and secondary schools, child-care facilities, and playgrounds). Also, residential PRGs should be discussed in the table above and values developed for residential use for both soil and groundwater.
31	Weston	3	15	RAO 3	This RAO should also include residential receptor.

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32	Weston	3	15	RAO 4	What are the proposed levels for NAPL ARARs in GW? Do you propose to use indicator parameters for NAPL migration to groundwater, and if so, what are they? This RAO needs to be revised, such as "Reduce to the extent practicable migration of NAPL to groundwater and migration of arsenic from soil to groundwater to ensure compliance with groundwater ARARs." Also include any other COCs that pose a potential migration to groundwater risk.
33	Weston	3	16	RAO 5	Remove this RAO; it is not acceptable. The remedial objective for groundwater is to restore it to beneficial use, not to restrict use. "RAO 5 - Restrict potential future potable use of groundwater at the Site."
34	Weston	3	16	RAO 6	Replace "COPC" and list the chemicals that are COCs in groundwater for all receptors. The remedial action will address the COCs identified in the RA, not all the COPCs evaluated in the RA. This RAO should also include residential receptor.
35	Weston	3	15	RAO 7	The RAO should state restore to "beneficial use" per EPA guidance rather than stating "restore groundwater to ARARs".
36	Weston	3	15	RAO 8	The use of term "Site-related" needs to be defined. Revise RAO 8 to state, "Protect aquatic receptors from exposure to Site-related PAHs, naphthalene, and chromium in sediment above the PRG."
37	WDNR	4.0	16	ARARS	Wisconsin relies on NR 812 which requires approval to install water supply wells on or near a remedial action site. We do not prohibit the installation of wells or use of groundwater.
38	WDNR	4.0	16	ARARS	NR 140 and NR 700 (NR 720) are ARARS.
39	WDNR	4.0	16	ARARS	Meeting the requirements imposed by EPA does not guarantee site closure; the State requirements must also be met to obtain closure of the site.
40	WDNR	4.0	16	ARARS	Confirm the zoning for the property and propose a cleanup level that is appropriate for the zoning.
41	Weston	4.4.1	17		Remedial action should address NAPL as principal threat waste.
42	WDNR	4.4.1.1	17		Direct contact soil standards are applicable to the 0-4 foot interval.
43	Weston	4.4.1.1.1	18		PRGs were only developed for COCs based on human health direct contact risk. What about PRGs based on migration to groundwater pathway? Need to develop PRGs for groundwater and soil migration to groundwater pathways even if the exposure pathway is planned to be mitigated via institutional controls.
44	WDNR	4.4.1.1.1	18		Soil contaminant concentrations should also be assessed with respect to protection of groundwater using groundwater MCLs.
45	Weston	4.4.1.1	18		The BAP-TE PRG is 4.7 for a commercial worker; the PRG of 5 in the document is rounded. Rounding of this PRG does not match the significant digits for PRGs presented for other receptors. Two significant digits is appropriate per WDNR NR170.19.
46	Weston	4.4.1.1	18		Target levels for PRGs should be based on cumulative risk, not set at target risk level for each COC. Using the approach presented in the document, the total site risk (arsenic + BAP-TE) would be 2E-05. This also does not account for other COPCs in the environment contributing to the total risk.
47	Weston	4.4.1.1	18		The 95UCL presented in the HHRA differs from the surface weighted 95UCL presented in this document. The 95UCLfor arsenic is 16.9 mg/kg for the CG/CS and 21.1 mg/kg for the FT area from the RI. This document presents the 95UCL for arsenic of 11.0 mg/kg for the CG/CS and 6.0 mg/kg for the FT area. Explain. Also, since there are differences between the 95UCL calculation methods, Appendix B should also present the surface weighted 95UCLs for arsenic.

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48	WDNR	4.4.1.1.1	18		Wisconsin typically does not use Thiessen polygons to evaluate the area and volume of contaminated material. Our standard method typically relies on diagrams similar to the two tone pink maps. Additional lines of evidence should be provided to justify the use of this delineation method.
49	Weston	4.4.1.1.1	18		Ensure that data set is robust enough to use Thiessen polygon methodology. Sampling was limited and focused and one surface and one subsurface interval may not be enough to represent the area using this methodology.
50	Weston	4.4.1.1.1	18		While arsenic and CPAHs may be the primary risk drivers from the HHRA, PRGs should be developed for all COCs that contribute to cumulative target risk >10-5 and cumulative target organ-specific HI greater than one.
51	Weston	4.4.1.1.1	18		Comparison of discrete soil samples to PRGs should also be performed to account for outliers or hot spots and to assess construction worker exposure. Construction worker PRGs should be achieved on a discrete sample basis. There are polygons where concentrations greater than the construction worker PRG will be left behind. Will there be other controls to protect the construction worker? The HHRA outlier analysis indicated elevated subsurface soil arsenic at 103 ppm (FT-C-31); 340 ppm (FT-TT06 (9-10)); 170 ppm (MW10 (6-7)); 170 ppm (MW16 (8-9)).
52	Weston	4.4.1.1.3	19		Clarify that blue staining is indicative of cyanide. Include discussion of cyanide concentrations that exceed PRGs. Elevated cyanide was found in subsurface soil and should also be evaluated.
53	WDNR	4.4.1.1.2	19		Historic Fill would likely include fill material brought on to the property to allow for construction of the original facility. The material that contains coal and coke is waste, not historic fill, and should be characterized as such.
54	Weston	4.4.1.1.2	19		Per Table 2-8 of the RI, none of the stockpiles that contained coke and very few of the piles that contained coal were sampled. Additionally, stockpiles 1 and 10 contain the coke oven brick and debris. The piles that have not been characterized require characterization and remediation as appropriate.
55	Weston	4.4.1.1.4	19		Volumes should be based on 4 foot for all COCs identified in surface soil.
56	Weston	4.4.1.2.1	20		How was vertical sample depth difference accounted for the weighted averaging for subsurface soil? Some samples were collected from 2-3 ft, 2-4 ft, 4-5 ft; 6-7 ft, 8-9 ft, etc. How do the different sample intervals influence the 95UCL?
57	Weston	4.4.1.2.2	21		A table presenting the visual observations (i.e., NAPL, NAPL blebs, sheen, elevated PID) along with point of compliance (nearby soil sample interval, downgradient monitoring well, etc.) should be included to provide lines of evidence for evaluating visual observations in lieu of subsurface soil samples collected for chemical characterization. If data is not available, it is unknown if contamination exists and the location should be included for remedial action.
58	Weston	4.4.1.2.2	21		CG-SB41 - NAPL blebs observed and coal and coke in the boring. Boring directly adjacent to a former tar tank. No soil samples collected for subsurface chemical characterization. Boring located in an area where NAPL observed in other borings. This location should be included in area for proposed remediation.

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59	Weston	4.4.1.2.2	21		CG-SB45 - log indicates NAPL blebs (30% of pore space NAPL). No soil samples collected for chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building. This location should be included in area for proposed remediation.
60	Weston	4.4.1.2.2	21		CG-SB45NW - log indicates NAPL blebs, coal and coke. No soil samples collected for subsurface chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building.This location should be included in area for proposed remediation.
61	Weston	4.4.1.2.2	21		CG-SB46 - NAPL blebs and sheen observed. No samples collected from this boring for subsurface chemical characterization or from nearby locations. Coke and coal fragments observed in the boring per RI Table 4-1. This location should be included in area for proposed remediation.
62	Weston	4.4.1.2.2	21		CG-SB58, add SB in front of 58 in Table on Page 21. Coke observed in the boring, samples only collected for chromium speciation. Boring is adjacent to MW-07 and CG-SB21 where NAPL has been observed. This area should be included for remediation.
63	Weston	4.4.1.2.2	22		CG-MW27D, the text in the cell is cut off; limited amount of what? No soil samples collected from this boring location or nearby locations for subsurface chemical characterization. Clinkers observed in boring. Coke and coal fragments observed in adjacent boring MW-27. This location should be included in area for proposed remediation.
64	Weston	4.4.1.2.2	22		MW-28D - The location has been eliminated because no impacts have been observed at nearby well MW-08. MW-08 is located upgradient of MW-28D. NAPL blebs were observed at 8.5 to 9.5 ft and coal and coke were observed up to 13 ft at MW-28D. Soil samples were not collected for subsurface chemical characterization from MW-28D. Vinyl chloride and other chlorinated VOCs have been detected in groundwater at MW-28D. This location should be included in area for proposed remediation.
65	Weston	4.4.1.2.2	22		FT-SB32 - Coke and possible NAPL observed in boring. No soil samples collected for subsurface chemical characterization
66	Weston	4.4.1.2.2	22	Figure 4-5	The polygon areas for NAPL should be different than the polygons based on soil sampling data. The areas on RI Figure 4-2 are areas of potentially saturated or partially saturated NAPL and NAPL bleb observations delineated by adjacent samples that do not contain potentially saturated or partially saturated NAPLs or NAPL blebs. The polygons for NAPL should be based on these areas.
67	Weston	4.4.1.2.2	22	Figure 4-5	Figure 4-5 shows the location for TT03 at the north end of the trench, the NAPL was observed at the southeast end of the trench. For test pits and trenches (i.e., TT03) that contained NAPL, the sample represents a larger area of the trench rather than that just the sample location.
68	Weston	4.4.1.2.3	22		What is the soil PRG for protection of groundwater?
69	Weston	4.4.2	23		Need more detail on how the proposed sediment PRGs were developed. PRGs should be developed for all MGP-related contaminants. Naphthalene was used as an indicator chemical for extent of contamination mapping but is not the only contaminant of concern.

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70	Weston	4.4.2	23		Need more detail on NOAEL calculation. Where did the 1400 mg/kg naphthalene value come from? A naphthalene concentration of 1400 mg/kg was measured at SDA07FD. It is uncertain whether this sample is the correct field duplicate. The laboratory report is not definite on which duplicate goes to which investigative sample. At 1400 mg/kg naphthalene, there is 73% survival and an ESBTU of 20, so how can this value be considered a NOAEL? At SDA06, 176 mg/kg naphthalene had 78% survival and ESBTU of 3. The test acceptability goal of 80% or greater survival is noted in the toxicity test methods. Also, if duplicates are evaluated the same as in the BHHRA, the average of SDA07 (255 mg/kg) and SDA07D (1400 mg/kg) = 827.5 with survival of (58*+73)=65.5%. Averaging of duplicates with >50% RPD is of concern; especially SDA07 (255/1400) which is being proposed for the sediment NOAEL.
71	Weston	4.4.2	24		More detail is needed for the PCA analysis and how data groupings were determined so that the reviewer can follow and perform their own analysis. Need references for statements on how groupings were determined (e.g. urban background pattern).
72	WDNR	4.4.2	23		Contaminated sediment at a depth greater than what is bioavailable still potentially requires a remedy.
73	WDNR	4.4.2			The Solvay AAD relies heavily on the FIELDS report and uses the conclusions to limit the scope of remedial goal development and potential clean up areas to include naphthalene only. This lead to using PCA analysis to draw conclusions for site attribution of contaminants that are not consistent with the conceptual site model for the Solvay site. Because this analysis relies so heavily on the FIELDS report, we think it's important to recognize the limitations of these approaches. Please consider the following:
74	WDNR	4.4.2			• The FIELDS report presented population testing using ANOVA analysis to test for differences in site and background concentrations. The testing does not prove or disprove that site contaminants came from the Solvay site. It is one line of evidence among many.
75	WDNR	4.4.2			• The FIELDS report noted that the number of samples limits the confidence in characterization and the certainty of interpretations. See page 2 " It should be noted that estimates are less certain where there are fewer data. As such, areas across the channel and deeper sediments with less density of sample locations should be interpreted with caution." This caution was not employed by the Solvay group related to the AAD document. Their conclusions do not recognize the variability and limitations of the data.
76	WDNR	4.4.2			• The conclusions of the population tests are compromised by the unbalanced data sets (number of data points), the wide differences in variances and the medians of the tested pairs.
77	WDNR	4.4.2			• The FIELDS report saw similarities in the concentration of PAHs, PCB and Chromium in the population tests between the background and the site. The conclusion seem to be implied that the facility could not be the source of these contaminants in the river. We believe that this is a misuse of the statistical analysis. While we see confounding issues in the application of the ANOVA analysis to these data, even if one could show similar populations of contaminants between the background and the site, it does not rule out a release of contaminants from the facility. The AAD/FS should continue to focus on the COCs released from the facility, as noted in the RI, to assess risks and evaluate alternatives to address the risk.
78	WDNR	4.4.2			• The conclusion that the contaminants in sediments on the shelves adjacent to the site were contributed by upstream sources is not necessarily accurate due to the fact that the navigation channel adjacent to the site is routinely dredged. Sediments transporting from upstream will be deposited in the deposition area created by the navigational dredging.

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79	WDNR	4.4.2			• The location of sediments vertically should be tied to the actual vertical elevation of the sediment surface and not to the segment. It's very likely that the upstream sediments in the 0-2 ft, 2-4 ft, etc. intervals are at a different elevation than the sediments at the site, and thereby not necessarily correspond to the same intervals. It is difficult to make comparisons without knowing the specific vertical elevation.
80	WDNR	4.4.2			• The FIELDS report is missing Table 4b PAH post-hoc results
81	WDNR	4.4.2			We, as agencies, had agreed to use naphthalene as an indicator of site related PAHs to the KK River, but do not think it is appropriate for establishing clean up goals. According to the RI for the Solvay site, the constituents associated with the site (page 4-68) were: 2 methylnaphthalene, naphthalene, dibenzofuran, Chromium, and Total PAHs (13 and 16). Evaluation of all these constituents should be done for the AAD and for determining clean up goals.
82	WDNR	4.4.2			We do not agree to the reasoning behind developing the PRGs for sediment for the site related to only naphthalene. Also, the reasoning behind selecting the concentration for PRG is not well presented or even very understandable. This will require more discussion.
83	WDNR	4.4.2			There is a lot of uncertainty with PAH chemistry results by contract labs. It is not unusual to have QA specs that allow a surrogate and spike recovery range of 40% to 130% and it not unusual to have the data used when the recovery is outside of the range due to dilution. We have also seen significant variability of the chemistry depending on the sample preparation and analytical detection methods. Therefore interpretation of the statistical analyses of the PAH data should carefully consider the uncertainty of the absolute accuracy of the chemistry results and our ability to draw accurate conclusions with respect to population analyses, fingerprinting, or site specific dose response. Due to these uncertainties, it is not possible to be as definite as the AAD document portrays for determining site related contributions to the contaminants. We do not support the AAD's exclusion of contaminated sediment areas based on the population analysis and fingerprinting.
84	Weston	5.1	27		Separate the GRAs per media for soil and groundwater.
85	Weston	Table 6-1			Should have separate GRAs for upland soil and GW.
86	Weston	Table 6-3			Engineered Cover System should be retained. Reducing migration to GW should be added for effectiveness.
87	Weston	Table 6-3			Soil cover meets RAOs for direct contact, not migration to GW. Effectiveness should be clarified.
88	Weston	Table 6-3			What is Onsite Management- Immobilization?
89	Weston	Table 6-3			Beneficial Reuse can be on-site or off-site in Table 6-1, but unclear in Table 6-3 if on-site or off-site beneficial reuse.
90	Weston	7.1	31-32		Alternatives 2, 3, and 4 don't meet ARARs or RAOs. Soil cover alone will not be sufficient to meet Migration to GW RAO as an engineered cover was "eliminated" in Table 6.3. "Beneficial reuse of stockpile material, as appropriate" and "consolidation of stockpiled materials" must meet ARARs. Arsenic or other COCs that exceed PRGs are not addressed in Alternative 2. Long term monitoring needs to include MNA evaluation for Alternative 2. NAPL recovery wells may be increased based on re-evaluation of locations eliminated. Need to add an alternative that includes Targeted removal of BAP-TE in addition to other COCs that exceed PRGs.
91	Weston	7.1			Need a more thorough description of "beneficial reuse" of stockpile materials.
92	Weston	7.1			All soil alternatives require institutional controls to restrict the property use.
93	Weston	7.1			Alternative 2 - how will a soil cover be used to achieve RAOs for the soil migration to groundwater pathway?

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94	Weston	7.1			Alternative 4 for soil states, "Targeted excavation of blue stained soil areas (Figure 4-5)." Figure 4-5 does not show the polygons around the blue-stained soil areas as part of the remedial areas.
95	Weston	7.2			Add an off-site disposal alternative that is separate from on-site CDF.
96	Weston	7.2			Is there an appropriate ARAR listed for construction of a CDF in the river?
97	Weston	7.2			Is non-reactive capping as presented in Table 6-4 the same as engineered cap presented in the Alternatives?
98	Weston	B-1			Include arsenic and BAP-TE hot spots exceeding construction worker PRGs. (see Appendix I of the HHRA).
99	Weston	Table B-1			Why is location CG-SB-109 listed twice?
100	Weston	Table B-1			By using 5 instead of 4.7 in averaging, what does this do to the SWAC?
101	Weston	Tble B-1			How do the "NS" results influence the average? Is the input a zero?
102	Weston	Table B-1			Cumulative risk cannot exceed 10-5. The PRGs need to be adjusted to address cumulative risk.
103	Weston	Appendix B			How is the surface area of each polygon determined? How is the 95UCL calculated? Need input/output sheets to confirm methods used.
104	Weston	Appendix B			"FS Area" used throughout when should be "FT Area".
105	Weston	Appendix B			Remediation depth would extend up to 2 feet, but should be 4 feet.
106	Weston	Table C-2			No Total Volume for all Stockpiles in the total row at the bottom of the table. It is uncertain how all stockpiles will be addressed particularly for those not sampled.
107	Weston	Table C-3			Volume should be based on 4 feet.
108	Weston	Table C-3			What does "Other fill present" mean?
109	Weston	Appendix D	Table D-1		Why aren't the C-1 naphthalenes (1-methylnapthalene, 2-methylnapthalene) presented in this table? Are the concentrations normalized?
110	Weston	Appendix D	Table D-2		Provide backup information and citations for how individual samples were grouped, and differences between petrogenic/pyrogenic/HMW/LMW/alkylated. Weathering could influence the HMW/LMW PAH groupings (with LMW degrading leaving behind higher concentration of HMW PAHs), and its impact should be considered. How do groupings compare to Pipe Sample results? The table should list samples where PAH34 was not analyzed for (e.g., SD-D-001). Removal of samples lacking alkylated results simply based on adjacent shallow surface samples is of concern, especially SD-D-08; additional sampling should be considered in the FS. How well does the "urban background" composition compare to the background composition of the site-specific upstream samples? This is important because some degraded PAH source fingerprints (e.g., coal tar, creosote, etc.) are similar to urban background fingerprints (Stogiannidis and Laane, 2015).
111	Weston	Appendix D	Figure D-1		What is the start/end for distance upstream to downstream? Are the concentrations normalized? Define surface/subsurface sample. The data summary table does not list 1-MN and 2-MN. These MGP-related PAHs need to be included. How are chrysene and chrysene/Triphenylene, benzo(k)fluoranthene and Benzo(j)+(k)fluoranthene, Dibenz(a,h)+(a,c)anthracene and Dibenzo(a,h)anthracene summed in the analysis? Table D-2 and Figure D-3 don't match, e.g., SDA27; SDA13; SDA17.
112	Weston	Appendix E	Table E-2a		Need input/output sheet to check calculations. Provide SWAC equation.
113	Weston	General			Should Alternatives address the infrastructure on-site including smokestack, remaining buildings, sewers, underground vaults?

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3	Weston	4	1.4	Last	Discuss the width of the sediment shelves. Disagree with text as it implies that other non-site related sources are cause of sediment in shelves. The text needs to be revised, such as "These deposits are the result of the accumulation of sediments and constituents from historic site operations, with contributions from numerous upstream and nearby point and non-point sources including the contaminated sediment within the Restoration Area."
4	Weston	4	1.4	Last	The text states that the sediment shelves are truncated at the Turning Basin; however, Figure 1.3 shows a Navigational Channel and sediment shelves at and downstream of the Turning Basin.
5	Weston	General	2	NA	The abbreviated summary of the RI Report is lacking pertinent information. The RI summary for the Feasibility Study report should include a Conceptual Site Model update, full summary of nature and extent and risks as a stand alone document rather than referencing back to figures in the RI Report. The reader should be able to understand the site COPCs and COCs based on human health, ecological, and migration to groundwater exposure pathways and the complete and incomplete pathways.
6	Weston	5	2.0	NA	Summarize the sampling approach; how many wells; how many rounds; quarterly, annually, etc. The RI summary should detail the sampling approach including decisions where samples were not collected.
7	Weston	5	2.0	NA	Describe the upland field observation sampling approach used to evaluate the presence of other fill materials (coal, coke, cinders, slag, clinker) and potentially mobile NAPL at the Site and that these activities were performed to identify potential principal threat waste (NAPL) and potential low level threat waste (fill). Also note that the sampling approach intentionally excluded stockpile/NAPL bleb, etc. sampling for laboratory analysis.
8	Weston	5	2.0	NA	Provide citations for the site documents (e.g., RI/FS work plan, QAPP, etc.). Provide citation for DQO statement.
9	Weston	7	2.1.1	Last	Provide citations for the "investigations completed by others".
10	Weston	8	2.2	NA	The nature and extent section does not discuss the migration to groundwater pathway and identified COCs.
11	Weston	8	2.2.1.1	Last	Describe what blue staining indicates; the text as written implies it requires cleaning up just because of a color. Also Section 4.4.1.1.3; the blue stained soil section should include a discussion of why the blue stained soil is an environmental concern. Section 4.1.7, page 4-18 in the RI states "The highest concentrations of cyanide were observed in the upper inch of the two small blue stained soil areas at CG-SB53 and FT-SB27." Include a summary of cyanide sampling and results and area and associated volume of contamination.

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12	Weston	8	2.2.1	NA	Discuss that field observations are used to identify area of potential principal threat waste (i.e., NAPL) and potential low level threat waste (i.e., process residuals/other fill/stockpiles). The soil section should include a discussion of why NAPL and process residuals are an environmental concern. Similar to discussion in Section 4.1.1 of the RI Report.
13	Weston	9	2.2.1.1	NA	The nature and extent summary should discuss all soil COPCs in the RI, not just primary constituents.
14	Weston	9	2.2.1.2	NA	The text should discuss NAPL recovery at monitoring well MW-07.
15	Weston	9	2.2.1.2	NA	The nature and extent summary should discuss all groundwater COPCs in the RI. Discuss other contaminants that exceeded the MCL or ES.
16	Weston	11	2.3	NA	The text needs to list the COCs identified in the HHRA for each media, each area, each receptor, not simply discuss primary contaminants. COCs should include all COPCs that exceed 10-6 cancer risk for carcinogens and a target organ HQ of 1 for non-carcinogens for any receptor and pathway.
17	Weston	11	2.3	Last	The text states, "Further indoor air exposures would be mitigated with the use of vapor barriers in future construction of onsite residences, if needed." The alternatives should present exposure pathway and potential remedial options.
18	Weston	11	2.3	NA	The groundwater discharge to surface water pathway needs to be discussed.
19	WDNR	14	3	Table	Wisconsin typically accepts risk at 10-6, not 10-5, unless there are attenuating factors, as in the case of vapor intrusion.
20	Weston	14	3	Table	The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300.430(e)(2)(I)) states that overall excess cancer risks should be within the risk range of 10-6 to 10-4 and that 10-6 shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available. NR 720.19 (5) states that residual contaminant levels for soil for direct contact shall be developed for individual compounds using the excess cancer risk of 1E-06 and that the cumulative excess cancer risk will not exceed 1E-05. Per NR 720.12, revise the PRGs to be based on 1E-06 for carcinogens and an HQ of 1 for non-carcinogens for individual COCs.
21	Weston	14	3	Table	Also list cyanide as "constituent" in surface soil and subsurface soil, and develop a PRG for cyanide. Cyanide was listed as a COPC in subsurface soil (Section 4.23 in RI Report), and elevated cyanide was measured in subsurface soil.
22	Weston	14	3	Table	Add all COCs as constituents for appropriate media. For example, benzene posed a risk of 1E-06 in surface/subsurface soil to the on-site commercial/industrial worker for the outdoor air pathway in the CG/CS Area per Table 9.7 of Appendix Y of the RI. A PRG needs to be developed for benzene.
23	Weston	14	3	Table	Fill up to 24 ft deep is discussed in the RI (Section 4.1.1.1). Subsurface soil should be listed as a medium with fill listed as a constituent.
24	Weston	14	3	Table	The potential receptors identified in the risk assessment should be listed for groundwater. The term "none expected" needs to be defined.

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25	Weston	14	3	Table	Separate Surface from Subsurface as the soil medium. Surface soil depth and subsurface soil depth need to be defined on the RAO table. ARARs (NR 725.05(2)(e) state surface soil is 4-feet.
26	Weston	14	3	Table	"Blue Staining" is not a constituent, change to cyanide.
27	Weston	15	3	Table	COCs in groundwater also include carcinogenic PAHs, ethylbenzene, cyanide, and iron. Need to clarify why they are not listed or identify them all as COCs.
28	WDNR	15	3.0	RAO 1	Wisconsin does not prohibit properties from being used for residential purposes. We can apply institutional controls that restrict the use of a property to Industrial or other use, depending on clean up levels.
29	Weston	15	3	RAO 1	Remove this RAO; it is not acceptable. The remedial objective for a site is to restore it for future use, not to restrict use.
30	Weston	15	3	RAO 1	The RAO should include the residential receptor, COCs, and PRGs. Institutional controls can be used to attain this RAO. The institutional control should also restrict other uses (development of the property including housing, elementary and secondary schools, child-care facilities, and playgrounds). Also, residential PRGs should be discussed in the table above and values developed for residential use for both soil and groundwater.
31	Weston	15	3	RAO 3	This RAO should also include residential receptor.
32	Weston	15	3	RAO 4	What are the proposed levels for NAPL ARARs in GW? Do you propose to use indicator parameters for NAPL migration to groundwater, and if so, what are they? This RAO needs to be revised, such as "Reduce to the extent practicable migration of NAPL to groundwater and migration of arsenic from soil to groundwater to ensure compliance with groundwater ARARs." Also include any other COCs that pose a potential migration to groundwater risk.
33	Weston	16	3	RAO 5	Remove this RAO; it is not acceptable. The remedial objective for groundwater is to restore it to beneficial use, not to restrict use. "RAO 5 - Restrict potential future potable use of groundwater at the Site."
34	Weston	16	3	RAO 6	Replace "COPC" and list the chemicals that are COCs in groundwater for all receptors. The remedial action will address the COCs identified in the RA, not all the COPCs evaluated in the RA. This RAO should also include residential receptor.
35	Weston	15	3	RAO 7	The RAO should state restore to "beneficial use" per EPA guidance rather than stating "restore groundwater to ARARs".
36	Weston	15	3	RAO 8	The use of term "Site-related" needs to be defined. Revise RAO 8 to state, "Protect aquatic receptors from exposure to Site-related COCs in sediment above the PRG." Naphthalene is not the only sediment COC.
37	WDNR	16	4.0	ARARS	Wisconsin relies on NR 812 which requires approval to install water supply wells on or near a remedial action site. We do not prohibit the installation of wells or use of groundwater.
38	WDNR	16	4.0	ARARS	NR 140 and NR 700 (NR 720) are ARARS.
39	WDNR	16	4.0	ARARS	Meeting the requirements imposed by EPA does not guarantee site closure; the State requirements must also be met to obtain closure of the site.
40	WDNR	16	4.0	ARARS	Confirm the zoning for the property and propose a cleanup level that is appropriate for the zoning.
41	Weston	17	4.4.1	NA	Remedial action should address NAPL as principal threat waste.

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42	WDNR	17	4.4.1.1	1st	Direct contact soil standards are applicable to the 0-4 foot interval per NR 725.05(2)(e).
43	Weston	18	4.4.1.1.1	NA	PRGs were only developed for COCs based on human health direct contact risk. What about PRGs based on migration to groundwater pathway? Need to develop PRGs for groundwater and soil migration to groundwater pathways even if the exposure pathway is planned to be mitigated via institutional controls.
44	WDNR	18	4.4.1.1.1	NA	Soil contaminant concentrations should also be assessed with respect to protection of groundwater using groundwater MCLs.
45	Weston	18	4.4.1.1.1	NA	The BAP-TE PRG is 4.7 for a commercial worker; the PRG of 5 in the document is rounded. Rounding of this PRG does not match the significant digits for PRGs presented for other receptors. Two significant digits is appropriate per WDNR NR170.19.
46	Weston	18	4.4.1.1.1	NA	PRGs need to consider cumulative risk. Using the approach presented in the document, the total site risk (arsenic + BAP-TE) would be 2E-05. This also does not account for other COPCs in the environment contributing to the total risk.
47	Weston	18	4.4.1.1.1	Table	The 95UCL presented in the HHRA differs from the surface weighted 95UCL presented in this document. The 95UCL for arsenic is 16.9 mg/kg for the CG/CS and 21.1 mg/kg for the FT area from the RI. This document presents the 95UCL for arsenic of 11.0 mg/kg for the CG/CS and 6.0 mg/kg for the FT area. Explain. Also, since there are differences between the 95UCL calculation methods, Appendix B should also present the surface weighted 95UCLs for arsenic.
48	WDNR	18	4.4.1.1.1	3rd	Wisconsin typically does not use Thiessen polygons to evaluate the area and volume of contaminated material. ~~Our standard method typically relies on diagrams similar to the two tone pink maps.~~ Additional lines of evidence should be provided to justify the use of this delineation method.
49	Weston	18	4.4.1.1.1	3rd	Ensure that data set is robust enough to use Thiessen polygon methodology. Sampling was limited and focused and one surface and one subsurface interval may not be enough to represent the area using this methodology.
50	Weston	18	4.4.1.1.1	NA	While arsenic and CPAHs may be the primary risk drivers from the HHRA, PRGs should be developed for all COCs that contribute to cumulative target risk >10-5 and cumulative target organ-specific HI greater than one.
51	Weston	18	4.4.1.1.1	NA	Comparison of discrete soil samples to PRGs should also be performed to account for outliers or hot spots and to assess construction worker exposure. Construction worker PRGs should be achieved on a discrete sample basis. There are polygons where concentrations greater than the construction worker PRG will be left behind. Will there be other controls to protect the construction worker? The HHRA outlier analysis indicated elevated subsurface soil arsenic at 103 ppm (FT-C-31); 340 ppm (FT-TT06 (9-10)); 170 ppm (MW10 (6-7)); 170 ppm (MW16 (8-9)).
52	WDNR	19	4.4.1.1.2	NA	Historic Fill would likely include fill material brought on to the property to allow for construction of the original facility. The material that contains coal and coke is waste, not historic fill, and should be characterized as such.

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53	Weston	19	4.4.1.1.2	NA	Per Table 2-8 of the RI, none of the stockpiles that contained coke and very few of the piles that contained coal were sampled. Additionally, stockpiles 1 and 10 contain the coke oven brick and debris. The piles that have not been characterized require characterization and remediation as appropriate.
54	Weston	19	4.4.1.1.3	NA	Clarify that blue staining is indicative of cyanide. Include discussion of cyanide concentrations that exceed PRGs. Elevated cyanide was found in subsurface soil and should also be evaluated.
55	Weston	19	4.4.1.1.4	NA	Volumes should be based on 4 foot for all COCs identified in surface soil per NR 725.05(2)(e).
56	Weston	20	4.4.1.2.1	NA	How was vertical sample depth difference accounted for the weighted averaging for subsurface soil? Some samples were collected from 2-3 ft, 2-4 ft, 4-5 ft; 6-7 ft, 8-9 ft, etc. How do the different sample intervals influence the 95UCL?
57	Weston	21	4.4.1.2.2	NA	A table presenting the visual observations (i.e., NAPL, NAPL blebs, sheen, elevated PID) along with point of compliance (nearby soil sample interval, downgradient monitoring well, etc.) should be included to provide lines of evidence for evaluating visual observations in lieu of subsurface soil samples collected for chemical characterization. If data is not available, it is unknown if contamination exists and the location should be included for remedial action.
58	Weston	21	4.4.1.2.2	Table	CG-SB41 - NAPL blebs observed and coal and coke in the boring. Boring directly adjacent to a former tar tank. No soil samples collected for subsurface chemical characterization. Boring located in an area where NAPL observed in other borings. This location should be included in area for proposed remediation.
59	Weston	21	4.4.1.2.2	Table	CG-SB45 - log indicates NAPL blebs (30% of pore space NAPL). No soil samples collected for chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building. This location should be included in area for proposed remediation.
60	Weston	21	4.4.1.2.2	Table	CG-SB45NW - log indicates NAPL blebs, coal and coke. No soil samples collected for subsurface chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building. This location should be included in area for proposed remediation.
61	Weston	21	4.4.1.2.2	Table	CG-SB46 - NAPL blebs and sheen observed. No samples collected from this boring for subsurface chemical characterization or from nearby locations. Coke and coal fragments observed in the boring per RI Table 4-1. This location should be included in area for proposed remediation.
62	Weston	21	4.4.1.2.2	Table	CG-SB58, add SB in front of 58 in Table on Page 21. Coke observed in the boring, samples only collected for chromium speciation. Boring is adjacent to MW-07 and CG-SB21 where NAPL has been observed. This area should be included for remediation.
63	Weston	22	4.4.1.2.2	Table	CG-MW27D, the text in the cell is cut off; limited amount of what? No soil samples collected from this boring location or nearby locations for subsurface chemical characterization. Clinkers observed in boring. Coke and coal fragments observed in adjacent boring MW-27. This location should be included in area for proposed remediation.

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64	Weston	22	4.4.1.2.2	Table	MW-28D - The location has been eliminated because no impacts have been observed at nearby well MW-08. MW-08 is located upgradient of MW-28D. NAPL blebs were observed at 8.5 to 9.5 ft and coal and coke were observed up to 13 ft at MW-28D. Soil samples were not collected for subsurface chemical characterization from MW-28D. Vinyl chloride and other chlorinated VOCs have been detected in groundwater at MW-28D. This location should be included in area for proposed remediation.
65	Weston	22	4.4.1.2.2	Table	FT-SB32 - Coke, sheen, and possible NAPL observed in boring. No soil samples collected for subsurface chemical characterization. This location should be included in area for proposed remediation.
66	Weston	22	4.4.1.2.2	Figure 4-5	The polygon areas for NAPL should be different than the polygons based on soil sampling data. The areas on RI Figure 4-2 are areas of potentially saturated or partially saturated NAPL and NAPL bleb observations delineated by adjacent samples that do not contain potentially saturated or partially saturated NAPLs or NAPL blebs. The remedial areas for NAPL should be based on these areas.
67	Weston	22	4.4.1.2.2	Figure 4-5	Figure 4-5 shows the location for TT03 at the north end of the trench, the NAPL was observed at the southeast end of the trench. For test pits and trenches (i.e., TT03) that contained NAPL, the sample represents a larger area of the trench rather than that just the sample location.
68	Weston	22	4.4.1.2.3	1st	What is the soil PRG for protection of groundwater?
69	Weston	23	4.4.2	Table	Need more detail on how the proposed sediment PRGs were developed. PRGs should be developed for all MGP-related contaminants. Naphthalene was used as an indicator chemical for extent of contamination mapping but is not the only COC.
70	Weston	23	4.4.2	4th bullet	Need more detail on NOAEL calculation. Where did the 1400 mg/kg naphthalene value come from? A naphthalene concentration of 1400 mg/kg was measured at SDA07FD. It is uncertain whether this sample is the correct field duplicate. The laboratory report is not definite on which duplicate goes to which investigative sample. At 1400 mg/kg naphthalene, there is 73% survival and an ESBTU of 20, so how can this value be considered a NOAEL? At SDA06, 176 mg/kg naphthalene had 78% survival and ESBTU of 3. The test acceptability goal of 80% or greater survival is noted in the toxicity test methods. Also, if duplicates are evaluated the same as in the BHHRA, the average of SDA07 (255 mg/kg) and SDA07D (1400 mg/kg) = 827.5 with survival of (58*+73)=65.5%. Averaging of duplicates with >50% RPD is of concern; especially SDA07 (255/1400) which is being proposed for the sediment NOAEL. Additionally, SDA07 is classified as "urban background" in the PCA analysis. Why would the site-related PRG be based on urban background?
	WDNR	23	4.4.2		~~Contaminated sediment at a depth greater than what is bioavailable still potentially requires a remedy.~~

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71	WDNR	23	4.4.2	NA	The Solvay AAD relies heavily on the FIELDS report and uses the conclusions to limit the scope of remedial goal development and potential clean up areas to include naphthalene only. This lead to using PCA analysis to draw conclusions for site attribution of contaminants that are not consistent with the conceptual site model for the Solvay site. Because this analysis relies so heavily on the FIELDS report, we think it's important to recognize the limitations of these approaches. Please consider the following:
72	WDNR	23	4.4.2	NA	• The FIELDS report presented population testing using ANOVA analysis to test for differences in site and background concentrations. The testing does not prove or disprove that site contaminants came from the Solvay site. It is one line of evidence among many.
73	WDNR	23	4.4.2	NA	• The FIELDS report noted that the number of samples limits the confidence in characterization and the certainty of interpretations. See page 2 " It should be noted that estimates are less certain where there are fewer data. As such, areas across the channel and deeper sediments with less density of sample locations should be interpreted with caution." This caution was not employed by the Solvay group related to the AAD document. Their conclusions do not recognize the variability and limitations of the data.
74	WDNR	23	4.4.2	NA	• The conclusions of the population tests are compromised by the unbalanced data sets (number of data points), the wide differences in variances and the medians of the tested pairs.
75	WDNR	23	4.4.2	NA	• The FIELDS report saw similarities in the concentration of PAHs, PCB and Chromium in the population tests between the background and the site. The conclusion seem to be implied that the facility could not be the source of these contaminants in the river. We believe that this is a misuse of the statistical analysis. While we see confounding issues in the application of the ANOVA analysis to these data, even if one could show similar populations of contaminants between the background and the site, it does not rule out a release of contaminants from the facility. The AAD/FS should continue to focus on the COCs released from the facility, as noted in the RI, to assess risks and evaluate alternatives to address the risk.
76	WDNR	23	4.4.2	NA	• The conclusion that the contaminants in sediments on the shelves adjacent to the site were contributed by upstream sources is not necessarily accurate due to the fact that the navigation channel adjacent to the site is routinely dredged. Sediments transporting from upstream will be deposited in the deposition area created by the navigational dredging.
77	WDNR	23	4.4.2	NA	• The location of sediments vertically should be tied to the actual vertical elevation of the sediment surface and not to the segment. It's very likely that the upstream sediments in the 0-2 ft, 2-4 ft, etc. intervals are at a different elevation than the sediments at the site, and thereby not necessarily correspond to the same intervals. It is difficult to make comparisons without knowing the specific vertical elevation.
78	WDNR	23	4.4.2	NA	• The FIELDS report is missing Table 4b PAH post-hoc results

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79	WDNR	23	4.4.2	NA	We, as agencies, had agreed to use naphthalene as an indicator of site related PAHs to the KK River, but do not think it is appropriate for establishing clean up goals. According to the RI for the Solvay site, the constituents associated with the site (page 4-68) were: 2 methylnaphthalene, naphthalene, dibenzofuran, Chromium, and Total PAHs (13 and 16). Evaluation of all these constituents should be done for the AAD and for determining clean up goals.
80	WDNR	23	4.4.2	NA	We do not agree to the reasoning behind developing the PRGs for sediment for the site related to only naphthalene. Also, the reasoning behind selecting the concentration for PRG is not well presented or even very understandable. This will require more discussion.
81	WDNR	23	4.4.2	NA	There is a lot of uncertainty with PAH chemistry results by contract labs. It is not unusual to have QA specs that allow a surrogate and spike recovery range of 40% to 130% and it not unusual to have the data used when the recovery is outside of the range due to dilution. We have also seen significant variability of the chemistry depending on the sample preparation and analytical detection methods. Therefore interpretation of the statistical analyses of the PAH data should carefully consider the uncertainty of the absolute accuracy of the chemistry results and our ability to draw accurate conclusions with respect to population analyses, fingerprinting, or site specific dose response. Due to these uncertainties, it is not possible to be as definite as the AAD document portrays for determining site related contributions to the contaminants. We do not support the AAD's exclusion of contaminated sediment areas based on the population analysis and fingerprinting.
82	Weston	27	5.1	NA	Separate the GRAs per media for soil and groundwater.
83	Weston	n	Tables 4-1 - 4-3	NA	Incorporate any ARARs cited in this comments file into the ARAR tables.
84	Weston	NA	Tables 6-1 through 6-4	NA	Include evaluation and screening of technology tables for groundwater.
85	Weston	NA	Table 6-1	NA	Should have separate GRAs for upland soil and GW.
86	Weston	NA	Table 6-3	NA	Engineered Cover System should be retained. Reducing migration to GW should be added for effectiveness.
87	Weston	NA	Table 6-3	NA	Soil cover meets RAOs for direct contact, not migration to GW. Effectiveness should be clarified.
88	Weston	NA	Table 6-3	NA	What is Onsite Management- Immobilization?
89	Weston	NA	Table 6-3	NA	Beneficial Reuse can be on-site or off-site in Table 6-1, but unclear in Table 6-3 if on-site or off-site beneficial reuse.
90	Weston	NA	Table 6-4	NA	Reactive capping should be retained in order to provide a treatment technology as an alternative component. All other treatment technologies have been eliminated.
91	Weston	31-32	7.1	NA	NAPL recovery wells may be increased based on re-evaluation of locations eliminated. Need to add an alternative that includes targeted removal of BAP-TE in addition to other COCs that exceed PRGs.
92	Weston	31-32	7.1	Alt. 2, 3, 4	Update alternative components, as necessary, in response to comments including but not limited to migration to groundwater PRGs, inclusion of all COCs per media, and updated areas/volumes accounting for cumulative risk and depth of surface soil.

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93	Weston	31-32	7.1	Alt. 2, 3, 4	Need a more thorough description of "beneficial reuse" of stockpile materials. Reuse of stockpile materials must be in accordance with NR 718.12 and 718.15 and NR 538.
94	Weston	31-32	7.1	Alt. 2, 3, 4	Alternatives need to include management and disposal of stockpile materials that do not meet the requirements for beneficial reuse.
95	Weston	31	7.1	Alt. 2	Long term monitoring needs to include MNA evaluation for Alternative 2.
96	Weston	31	7.1	Alt. 2, 3, 4	Specify proposed thickness and material components of soil cover.
97	Weston	31	7.1	Alt. 2, 3, 4	Soil cover alone may not be sufficient to meet migration to groundwater RAOs. An engineered cover may be required to meet migration to groundwater RAOs but was "eliminated" in Table 6-3.
98	Weston	31	7.1	Alt. 2	Alternative 2 includes a component for recovery of mobile NAPL from groundwater. The remedial action must also address principal threat waste (e.g., NAPL and tar blebs) in the vadose zone.
99	Weston	31-32	7.1	Alt. 2, 3, 4	NAPL, tar blebs, etc. are potential continuing sources of contamination in soil that pose a risk to groundwater and per the vapor intrusion pathway. Remedial action alternatives should address NAPL as principal threat waste.
100	Weston	31-32	7.1	Alt. 2, 3, 4	Each alternative requires a separate figure clearly depicting the various components of the alternative and areas requiring remediation.
101	Weston	31-32	7.1	Alt. 2, 3, 4	All alternatives require a component to include surface coal, coke, cinders, slag, clinkers scattered on the site surface and not associated with a stockpile for appropriate management. Reuse of these materials must be in accordance with NR 718.15 and NR 538.
102	Weston	31-32	7.1	Alt. 2, 3, 4	The 2008 ATSDR Report provided as Appendix D to the RI concluded that ACM was present at the Site in various building materials, but only one area of visibly friable ACM was present and was recommended for immediate removal, which was performed prior to implementation of RI activities. However, ACM remains at the site. All alternatives require a component to address ACM.
103	Weston	31-32	7.1	Alt. 2, 3, 4	Waste or contaminated soil may exist within or underlying the remaining infrastructure including remnants of buildings, smokestack, foundations, etc. Each alternative requires a component to characterize or to remove these structures, as appropriate.
104	Weston	31-32	7.1	Alt. 3, 4	All alternatives with soil removal require confirmation sampling as a component of the alternative.
105	Weston	32	7.1	Alt. 4	Alternative 4 for soil states, "Targeted excavation of blue stained soil areas (Figure 4-5)." Figure 4-5 does not show the polygons around the blue-stained soil areas as part of the remedial areas.
106	Weston	33	7.2	Alt. 2, 3, 4	Each alternative requires a separate figure clearly depicting the various components of the alternative and areas requiring remediation.
107	Weston	33	7.2	Alt. 2, 3, 4	The alternative components currently include on-site CDF and/or off-site disposal. One-site CDF and off-site disposal components should be evaluated separately in different alternatives.
108	Weston	33	7.2	Alt 2, 3, 4	Sediment alternatives should include remedial options to address all sediment COCs, not just naphthalene.
109	Weston	33	7.2	Alt 2, 3, 4	Areas and volumes of contamination for sediment alternatives should be updated per previous comments regarding the sediment PRG/NOAEL calculation.

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110	Weston	33	7.2	Alt 2, 3, 4	Areas and volumes of contamination for sediment alternatives should be updated per previous comments regarding the applicability of the PCA analysis.
111	Weston	33	7.2	NA	Is non-reactive capping as presented in Table 6-4 the same as engineered cap presented in the Alternatives?
112	Weston	33	7.2	NA	An alternative including reactive capping should be evaluated.
113	Weston	NA	Table B-1	NA	Include hot spots for all COCs exceeding construction worker PRGs. (see Appendix I of the HHRA).
114	Weston	NA	Table B-1 (new Table B-10)	Page 1 of 4 for Table B-10	Why is location CG-SB-109 listed twice?
115	Weston	NA	Attachment B-1	NA	What statistical program was used for the Spatial Bootstrap Model?
116	Weston	NA	Attachment B-1	NA	Per the first page of Attachment B-1, the text presents the initial two steps for the Model; however, the text does not reference tables or output sheets for these steps for the reader to reference. Please provide.
117	Weston	NA	Attachment B-1, Table B-1	NA	Please provide the post remedial action concentrations for all COCs.
118	Weston	NA	Table C-3	NA	Volume should be based on 4 feet.
119	Weston	NA	Table C-3	NA	Please define "Other fill material present" in a footnote to the table.

Milwaukee Solvay Coke and Gas Site, Alternatives Screening Technical Memorandum					
Comment Number	**Agency**	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
SEDIMENT (Do not include with version to PRP group)					
1	Weston	24	4.4.2		More detail is needed for the PCA analysis and how data groupings were determined so that the reviewer can follow and perform their own analysis. Need references for statements on how groupings were determined (e.g. urban background pattern).
2	Weston	Table D-1	Appendix D		Why aren't the C-1 naphthalenes (1-methylnapthalene, 2-methylnapthalene) presented in this table? Are the concentrations normalized?
3	Weston	Table D-2	Appendix D		Provide backup information and citations for how individual samples were grouped, and differences between petrogenic/pyrogenic/HMW/LMW/alkylated. Weathering could influence the HMW/LMW PAH groupings (with LMW degrading leaving behind higher concentration of HMW PAHs), and its impact should be considered. How do groupings compare to Pipe Sample results? The table should list samples where PAH34 was not analyzed for (e.g., SD-D-001). Removal of samples lacking alkylated results simply based on adjacent shallow surface samples is of concern, especially SD-D-08; additional sampling should be considered in the FS. How well does the "urban background" composition compare to the background composition of the site-specific upstream samples? This is important because some degraded PAH source fingerprints (e.g., coal tar, creosote, etc.) are similar to urban background fingerprints (Stogiannidis and Laane, 2015).
4	Weston	Figure D-1	Appendix D		What is the start/end for distance upstream to downstream? Are the concentrations normalized? Define surface/subsurface sample. The data summary table does not list 1-MN and 2-MN. These MGP-related PAHs need to be included. How are chrysene and chrysene/Triphenylene, benzo(k)fluoranthene and Benzo(j)+(k)fluoranthene, Dibenz(a,h)+(a,c)anthracene and Dibenzo(a,h)anthracene summed in the analysis? Table D-2 and Figure D-3 don't match, e.g., SDA27; SDA13; SDA17.
5	Weston	Table E-2a	Appendix E		Need input/output sheet to check calculations. Provide SWAC equation.

Milwaukee Solvay Coke and Gas Site, Alternatives Screening Technical Memorandum				
Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
1	2	1.2	NA	The introductory paragraph should be clear that the Site is both upland and the adjacent river. The site source(s) should also be identified in the introductory paragraph (i.e., MGP, coal, tannery).
2	2	1.2	NA	The current surrounding land use should be discussed, for example the U of Milwaukee campus building is a surrounding land use that is not industrial. It is located at 600 Greenfield.
3	4	1.4	Last	Discuss the width of the sediment shelves. Disagree with text as it implies that other non-site related sources are cause of sediment in shelves. The text needs to be revised, such as "These deposits are the result of the accumulation of sediments and constituents from historic site operations, with contributions from numerous upstream and nearby point and non-point sources including the contaminated sediment within the Restoration Area."
4	4	1.4	Last	The text states that the sediment shelves are truncated at the Turning Basin; however, Figure 1.3 shows a Navigational Channel and sediment shelves at and downstream of the Turning Basin.
5	General	2	NA	The abbreviated summary of the RI Report is lacking pertinent information. The RI summary for the Feasibility Study report should include a Conceptual Site Model update, full summary of nature and extent and risks as a stand alone document rather than referencing back to figures in the RI Report. The reader should be able to understand the site COPCs and COCs based on human health, ecological, and migration to groundwater exposure pathways and the complete and incomplete pathways.
6	5	2.0	NA	Summarize the sampling approach; how many wells; how many rounds; quarterly, annually, etc. The RI summary should detail the sampling approach including decisions where samples were not collected.
7	5	2.0	NA	Describe the upland field observation sampling approach used to evaluate the presence of other fill materials (coal, coke, cinders, slag, clinker) and potentially mobile NAPL at the Site and that these activities were performed to identify potential principal threat waste (NAPL) and potential low level threat waste (fill). Also note that the sampling approach intentionally excluded stockpile/NAPL bleb, etc. sampling for laboratory analysis.
8	5	2.0	NA	Provide citations for the site documents (e.g., RI/FS work plan, QAPP, etc.). Provide citation for DQO statement.
9	7	2.1.1	Last	Provide citations for the "investigations completed by others".
10	8	2.2	NA	The nature and extent section does not discuss the migration to groundwater pathway and identified COCs.
11	8	2.2.1.1	Last	Describe what blue staining indicates; the text as written implies it requires cleaning up just because of a color. Also Section 4.4.1.1.3; the blue stained soil section should include a discussion of why the blue stained soil is an environmental concern. Section 4.1.7, page 4-18 in the RI states "The highest concentrations of cyanide were observed in the upper inch of the two small blue stained soil areas at CG-SB53 and FT-SB27." Include a summary of cyanide sampling and results and areas and associated volumes of contamination. For instance, SB-C-31 collected in the FT area had a cyanide concentration of 190 mg/kg from 0 to 0.5 ft bgs. Remediation of the cyanide-contaminated areas should be delineated based on available sample data and a developed PRG for the contaminant of concern.

Milwaukee Solvay Coke and Gas Site, Alternatives Screening Technical Memorandum				
Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
12	8	2.2.1	NA	Discuss that field observations are used to identify area of potential principal threat waste (i.e., NAPL) and potential low level threat waste (i.e., process residuals/other fill/stockpiles). The soil section should include a discussion of why NAPL and process residuals are an environmental concern. Similar to discussion in Section 4.1.1 of the RI Report.
13	9	2.2.1.1	NA	The nature and extent summary should discuss all soil COPCs in the RI, not just primary constituents.
14	9	2.2.1.2	NA	The text should discuss NAPL recovery at monitoring well MW-07.
15	9	2.2.1.2	NA	The nature and extent summary should discuss all groundwater COPCs in the RI. Discuss other contaminants that exceeded the MCL or ES.
16	11	2.3	NA	The text needs to list the COCs identified in the HHRA for each media, each area, each receptor, not simply discuss primary contaminants. COCs should include all COPCs that exceed 10-6 cancer risk for carcinogens and a target organ HQ of 1 for non-carcinogens for any receptor and pathway.
17	11	2.3	Last	The text states, "Further indoor air exposures would be mitigated with the use of vapor barriers in future construction of onsite residences, if needed." The alternatives should present exposure pathway and potential remedial options.
18	11	2.3	NA	The groundwater discharge to surface water pathway needs to be discussed.
19	14	3	Table	Wisconsin typically accepts risk at 10-6, not 10-5, unless there are attenuating factors, as in the case of vapor intrusion.
20	14	3	Table	The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300.430(e)(2)(I)) states that overall excess cancer risks should be within the risk range of 10-6 to 10-4 and that 10-6 shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available. WAC NR 720.19 (5) states that residual contaminant levels for soil for direct contact shall be developed for individual compounds using the excess cancer risk of 1E-06 and that the cumulative excess cancer risk will not exceed 1E-05. Per WAC NR 720.12, revise the PRGs to be based on 1E-06 for carcinogens and an HQ of 1 for non-carcinogens for individual COCs.
21	14	3	Table	Also list cyanide as "constituent" in surface soil and subsurface soil, and develop a PRG for cyanide. Cyanide was listed as a COPC in subsurface soil (Section 4.23 in RI Report), and elevated cyanide was measured in subsurface soil.
22	14	3	Table	Add all COCs as constituents for appropriate media. For example, benzene posed a risk of 1E-06 in surface/subsurface soil to the on-site commercial/industrial worker for the outdoor air pathway in the CG/CS Area per Table 9.7 of Appendix Y of the RI. A PRG needs to be developed for benzene.
23	14	3	Table	Evaluate water quality data for pH readings per compliance with WAC NR 140.
24	14	3	Table	Fill up to 24 ft deep is discussed in the RI (Section 4.1.1.1). Subsurface soil should be listed as a medium with fill listed as a constituent.
25	14	3	Table	The potential receptors identified in the risk assessment should be listed for groundwater. The term "none expected" needs to be defined.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
26	14	3	Table	Separate Surface from Subsurface as the soil medium. Surface soil depth and subsurface soil depth need to be defined on the RAO table. WAC NR 725.05(2)(e) indicates surface soil is 4-feet.
27	14	3	Table	"Blue Staining" is not a constituent, change to cyanide.
28	15	3	Table	COCs in groundwater also include carcinogenic PAHs, ethylbenzene, cyanide, and iron. Need to clarify why they are not listed or identify them all as COCs.
29	15	3.0	RAO 1	Wisconsin does not prohibit properties from being used for residential purposes. We can apply institutional controls that restrict the use of a property to Industrial or other use, depending on clean up levels.
30	15	3	RAO 1	Remove this RAO; it is not acceptable. The remedial objective for a site is to restore it for future use, not to restrict use.
31	15	3	RAO 1	The RAO should include the residential receptor, COCs, and PRGs. Institutional controls can be used to attain this RAO. The institutional control should also restrict other uses (development of the property including housing, elementary and secondary schools, child-care facilities, and playgrounds). Also, residential PRGs should be discussed in the table above and values developed for residential use for both soil and groundwater.
32	15	3	RAO 3	This RAO should also include residential receptor.
33	15	3	RAO 4	What are the proposed levels for NAPL ARARs in GW? Do you propose to use indicator parameters for NAPL migration to groundwater, and if so, what are they? This RAO needs to be revised, such as "Reduce to the extent practicable migration of NAPL to groundwater and migration of arsenic from soil to groundwater to ensure compliance with groundwater ARARs." Also include any other COCs that pose a potential migration to groundwater risk.
34	16	3	RAO 5	Remove this RAO; it is not acceptable. The remedial objective for groundwater is to restore it to beneficial use, not to restrict use. "RAO 5 - Restrict potential future potable use of groundwater at the Site."
35	16	3	RAO 6	Replace "COPC" and list the chemicals that are COCs in groundwater for all receptors. The remedial action will address the COCs identified in the RA, not all the COPCs evaluated in the RA. This RAO should also include residential receptor.
36	15	3	RAO 7	The RAO should state restore to "beneficial use" per EPA guidance rather than stating "restore groundwater to ARARs".
37	15	3	RAO 8	The use of term "Site-related" needs to be defined. Revise RAO 8 to state, "Protect aquatic receptors from exposure to Site-related COCs in sediment above the PRG." Naphthalene is not the only sediment COC.
38	16	4.0	ARARS	Wisconsin relies on WAC NR 812 which requires approval to install water supply wells on or near a remedial action site. We do not prohibit the installation of wells or use of groundwater.
39	16	4.0	ARARS	WAC NR 140 and NR 700 (NR 720) are ARARS.
40	16	4.0	ARARS	Meeting the requirements imposed by EPA does not guarantee site closure; the State requirements must also be met to obtain closure of the site.
41	16	4.0	ARARS	Confirm the zoning for the property and propose a cleanup level that is appropriate for the zoning.
42	17	4.4.1	NA	Remedial action should address NAPL as principal threat waste.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
43	17	4.4.1.1	1st	Direct contact soil standards are applicable to the 0-4 foot interval per WAC NR 725.05(2)(e).
44	18	4.4.1.1.1	NA	PRGs were only developed for COCs based on human health direct contact risk. What about PRGs based on migration to groundwater pathway? Need to develop PRGs for groundwater and soil migration to groundwater pathways even if the exposure pathway is planned to be mitigated via institutional controls.
45	18	4.4.1.1.1	NA	Soil contaminant concentrations should also be assessed with respect to protection of groundwater using groundwater MCLs.
46	18	4.4.1.1.1	NA	The BAP-TE PRG is 4.7 for a commercial worker; the PRG of 5 in the document is rounded. Rounding of this PRG does not match the significant digits for PRGs presented for other receptors. Two significant digits is appropriate per WAC NR 170.19.
47	18	4.4.1.1.1	NA	PRGs need to consider cumulative risk. Using the approach presented in the document, the total site risk (arsenic + BAP-TE) would be 2E-05. This also does not account for other COPCs in the environment contributing to the total risk.
48	18	4.4.1.1.1	Table	The 95UCL presented in the HHRA differs from the surface weighted 95UCL presented in this document. The 95UCL for arsenic is 16.9 mg/kg for the CG/CS and 21.1 mg/kg for the FT area from the RI. This document presents the 95UCL for arsenic of 11.0 mg/kg for the CG/CS and 6.0 mg/kg for the FT area. Explain. Also, since there are differences between the 95UCL calculation methods, Appendix B should also present the surface weighted 95UCLs for arsenic.
49	18	4.4.1.1.1	3rd	Wisconsin typically does not use Thiessen polygons to evaluate the area and volume of contaminated material. Additional lines of evidence should be provided to justify the use of this delineation method.
50	18	4.4.1.1.1	3rd	Ensure that data set is robust enough to use Thiessen polygon methodology. Sampling was limited and focused and one surface and one subsurface interval may not be enough to represent the area using this methodology.
51	18	4.4.1.1.1	NA	While arsenic and CPAHs may be the primary risk drivers from the HHRA, PRGs should be developed for all COCs that contribute to cumulative target risk >10-5 and cumulative target organ-specific HI greater than one.
52	18	4.4.1.1.1	NA	Comparison of discrete soil samples to PRGs should also be performed to account for outliers or hot spots and to assess construction worker exposure. Construction worker PRGs should be achieved on a discrete sample basis. There are polygons where concentrations greater than the construction worker PRG will be left behind. Will there be other controls to protect the construction worker? The HHRA outlier analysis indicated elevated subsurface soil arsenic at 103 ppm (FT-C-31); 340 ppm (FT-TT06 (9-10)); 170 ppm (MW10 (6-7)); 170 ppm (MW16 (8-9)).
53	19	4.4.1.1.2	NA	Historic Fill would likely include fill material brought on to the property to allow for construction of the original facility. The material that contains coal and coke is waste, not historic fill, and should be characterized as such.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
54	19	4.4.1.1.2	NA	Per Table 2-8 of the RI, none of the stockpiles that contained coke and very few of the piles that contained coal were sampled. Additionally, stockpiles 1 and 10 contain the coke oven brick and debris. The piles that have not been characterized require characterization and remediation as appropriate.
55	19	4.4.1.1.3	NA	Clarify that blue staining is indicative of cyanide. Include discussion of cyanide concentrations that exceed PRGs. Elevated cyanide was found in subsurface soil and should also be evaluated.
56	19	4.4.1.1.4	NA	Volumes should be based on 4 foot for all COCs identified in surface soil per WAC NR 725.05(2)(e).
57	20	4.4.1.2.1	NA	How was vertical sample depth difference accounted for the weighted averaging for subsurface soil? Some samples were collected from 2-3 ft, 2-4 ft, 4-5 ft; 6-7 ft, 8-9 ft, etc. How do the different sample intervals influence the 95UCL?
58	21	4.4.1.2.2	NA	A table presenting the visual observations (i.e., NAPL, NAPL blebs, sheen, elevated PID) along with point of compliance (nearby soil sample interval, downgradient monitoring well, etc.) should be included to provide lines of evidence for evaluating visual observations in lieu of subsurface soil samples collected for chemical characterization. If data is not available, it is unknown if contamination exists and the location should be included for remedial action.
59	21	4.4.1.2.2	Table	CG-SB41 - NAPL blebs observed and coal and coke in the boring. Boring directly adjacent to a former tar tank. No soil samples collected for subsurface chemical characterization. Boring located in an area where NAPL observed in other borings. This location should be included in area for proposed remediation.
60	21	4.4.1.2.2	Table	CG-SB45 - log indicates NAPL blebs (30% of pore space NAPL). No soil samples collected for chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building. This location should be included in area for proposed remediation.
61	21	4.4.1.2.2	Table	CG-SB45NW - log indicates NAPL blebs, coal and coke. No soil samples collected for subsurface chemical characterization of subsurface from this location or any nearby locations. Due to the partially demolished building in this area, very few soil samples were collected to characterize this area. There may be contamination under the partially demolished building. This location should be included in area for proposed remediation.
62	21	4.4.1.2.2	Table	CG-SB46 - NAPL blebs and sheen observed. No samples collected from this boring for subsurface chemical characterization or from nearby locations. Coke and coal fragments observed in the boring per RI Table 4-1. This location should be included in area for proposed remediation.
63	21	4.4.1.2.2	Table	CG-SB58, add SB in front of 58 in Table on Page 21. Coke observed in the boring, samples only collected for chromium speciation. Boring is adjacent to MW-07 and CG-SB21 where NAPL has been observed. This area should be included for remediation.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
64	22	4.4.1.2.2	Table	CG-MW27D, the text in the cell is cut off; limited amount of what? No soil samples collected from this boring location or nearby locations for subsurface chemical characterization. Clinkers observed in boring. Coke and coal fragments observed in adjacent boring MW-27. This location should be included in area for proposed remediation.
65	22	4.4.1.2.2	Table	MW-28D - The location has been eliminated because no impacts have been observed at nearby well MW-08. MW-08 is located upgradient of MW-28D. NAPL blebs were observed at 8.5 to 9.5 ft and coal and coke were observed up to 13 ft at MW-28D. Soil samples were not collected for subsurface chemical characterization from MW-28D. Vinyl chloride and other chlorinated VOCs have been detected in groundwater at MW-28D. This location should be included in area for proposed remediation.
66	22	4.4.1.2.2	Table	FT-SB32 - Coke, sheen, and possible NAPL observed in boring. No soil samples collected for subsurface chemical characterization. This location should be included in area for proposed remediation.
67	22	4.4.1.2.2	Table	Per the ITRC Petroleum Vapor Intrusion Table 3-1, LNAPL indicators include benzene at concentrations greater than 10 mg/kg. NAPL areas for remediation should include but not be limited to SB-A-04, SB-A-17, CG-SB23, and CS-SB03 for locations with benzene concentrations greater than 10 mg/kg.
68	22	4.4.1.2.2	Table	Per the ITRC Petroleum Vapor Intrusion Table 3-1, LNAPL indicators include PID or FID readings > 500 ppm. NAPL areas for remediation should include but not be limited to CG-SB45, MW-22D, and CG-SB47 for locations with PID readings greater than 500.
69	22	4.4.1.2.2	Table	Coal tar should be considered a principal threat waste per USEPA Guide to Principal Threat and Low Level Threat Wastes (40 CFR 300.430). Include all locations with evidence of coal tar including but not limited to SB-A-03, SB-A-23, SB-A-24, CG-SB41, FT-SB32, and TP-05 (per RI Figure 4-2) as part of NAPL remediation areas.
70	22	4.4.1.2.2	Figure 4-5	The polygon areas for NAPL should be different than the polygons based on soil sampling data. The areas on RI Figure 4-2 are areas of potentially saturated or partially saturated NAPL and NAPL bleb observations delineated by adjacent samples that do not contain potentially saturated or partially saturated NAPLs or NAPL blebs. The remedial areas for NAPL should be based on these areas.
71	22	4.4.1.2.2	Figure 4-5	Figure 4-5 shows the location for TT03 at the north end of the trench, the NAPL was observed at the southeast end of the trench. For test pits and trenches (i.e., TT03) that contained NAPL, the sample represents a larger area of the trench rather than that just the sample location.
72	22	4.4.1.2.3	1st	What is the soil PRG for protection of groundwater?
73	23	4.4.2	Table	Need more detail on how the proposed sediment PRGs were developed. PRGs should be developed for all MGP-related contaminants. Naphthalene was used as an indicator chemical for extent of contamination mapping but is not the only COC.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
74	23	4.4.2	4th bullet	Need more detail on NOAEL calculation. Where did the 1400 mg/kg naphthalene value come from? A naphthalene concentration of 1400 mg/kg was measured at SDA07FD. It is uncertain whether this sample is the correct field duplicate. The laboratory report is not definite on which duplicate goes to which investigative sample. At 1400 mg/kg naphthalene, there is 73% survival and an ESBTU of 20, so how can this value be considered a NOAEL? At SDA06, 176 mg/kg naphthalene had 78% survival and ESBTU of 3. The test acceptability goal of 80% or greater survival is noted in the toxicity test methods. Also, if duplicates are evaluated the same as in the BHHRA, the average of SDA07 (255 mg/kg) and SDA07D (1400 mg/kg) = 827.5 with survival of (58*+73)=65.5%. Averaging of duplicates with >50% RPD is of concern; especially SDA07 (255/1400) which is being proposed for the sediment NOAEL. Additionally, SDA07 is classified as "urban background" in the PCA analysis. Why would the site-related PRG be based on urban background?
75	23	4.4.2	NA	The Solvay AAD relies heavily on the FIELDS report and uses the conclusions to limit the scope of remedial goal development and potential clean up areas to include naphthalene only. This lead to using PCA analysis to draw conclusions for site attribution of contaminants that are not consistent with the conceptual site model for the Solvay site. Because this analysis relies so heavily on the FIELDS report, we think it's important to recognize the limitations of these approaches. Please consider the following:
76	23	4.4.2	NA	• The FIELDS report presented population testing using ANOVA analysis to test for differences in site and background concentrations. The testing does not prove or disprove that site contaminants came from the Solvay site. It is one line of evidence among many.
77	23	4.4.2	NA	• The FIELDS report noted that the number of samples limits the confidence in characterization and the certainty of interpretations. See page 2 " It should be noted that estimates are less certain where there are fewer data. As such, areas across the channel and deeper sediments with less density of sample locations should be interpreted with caution." This caution was not employed by the Solvay group related to the AAD document. Their conclusions do not recognize the variability and limitations of the data.
78	23	4.4.2	NA	• The conclusions of the population tests are compromised by the unbalanced data sets (number of data points), the wide differences in variances and the medians of the tested pairs.
79	23	4.4.2	NA	• The FIELDS report saw similarities in the concentration of PAHs, PCB and Chromium in the population tests between the background and the site. The conclusion seem to be implied that the facility could not be the source of these contaminants in the river. We believe that this is a misuse of the statistical analysis. While we see confounding issues in the application of the ANOVA analysis to these data, even if one could show similar populations of contaminants between the background and the site, it does not rule out a release of contaminants from the facility. The AAD/FS should continue to focus on the COCs released from the facility, as noted in the RI, to assess risks and evaluate alternatives to address the risk.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
80	23	4.4.2	NA	• The conclusion that the contaminants in sediments on the shelves adjacent to the site were contributed by upstream sources is not necessarily accurate due to the fact that the navigation channel adjacent to the site is routinely dredged. Sediments transporting from upstream will be deposited in the deposition area created by the navigational dredging.
81	23	4.4.2	NA	• The location of sediments vertically should be tied to the actual vertical elevation of the sediment surface and not to the segment. It's very likely that the upstream sediments in the 0-2 ft, 2-4 ft, etc. intervals are at a different elevation than the sediments at the site, and thereby not necessarily correspond to the same intervals. It is difficult to make comparisons without knowing the specific vertical elevation.
82	23	4.4.2	NA	• The FIELDS report is missing Table 4b PAH post-hoc results
83	23	4.4.2	NA	We, as agencies, had agreed to use naphthalene as an indicator of site related PAHs to the KK River, but do not think it is appropriate for establishing clean up goals. According to the RI for the Solvay site, the constituents associated with the site (page 4-68) were: 2-methylnaphthalene, naphthalene, dibenzofuran, chromium, and total PAHs (13 and 16). Evaluation of all these constituents should be done for the AAD and for determining clean up goals.
84	23	4.4.2	NA	We do not agree to the reasoning behind developing the PRGs for sediment for the site related to only naphthalene. Also, the reasoning behind selecting the concentration for PRG is not well presented or even very understandable. This will require more discussion.
85	23	4.4.2	NA	There is a lot of uncertainty with PAH chemistry results by contract labs. It is not unusual to have QA specs that allow a surrogate and spike recovery range of 40% to 130% and it not unusual to have the data used when the recovery is outside of the range due to dilution. We have also seen significant variability of the chemistry depending on the sample preparation and analytical detection methods. Therefore interpretation of the statistical analyses of the PAH data should carefully consider the uncertainty of the absolute accuracy of the chemistry results and our ability to draw accurate conclusions with respect to population analyses, fingerprinting, or site specific dose response. Due to these uncertainties, it is not possible to be as definite as the AAD document portrays for determining site related contributions to the contaminants. We do not support the AAD's exclusion of contaminated sediment areas based on the population analysis and fingerprinting.
86	25-26	4.4.2	1st	Remove the PCA analysis discussion from the document. The purpose of the alternatives screening technical memorandum is not to exclude areas of contamination or to attribute contamination to other sources based on a forensic analysis.
87	27	5.1	NA	Separate the GRAs per media for soil and groundwater.
88	NA	Tables 4-1 - 4-3	NA	Incorporate any ARARs cited in this comments file into the ARAR tables.
89	NA	Table 4-1	NA	Add the ITRC October 2014 Petroleum Guidance Vapor Intrusion Fundamentals of Screening, Investigation, and Management.
90	NA	Table 4-1	NA	Add secondary MCLs as a TBC.
91	NA	Tables 6-1 through 6-4	NA	Include evaluation and screening of technology tables for groundwater.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
92	NA	Table 6-1	NA	Should have separate GRAs for upland soil and GW.
93	NA	Table 6-3	NA	Engineered Cover System should be retained. Reducing migration to GW should be added for effectiveness.
94	NA	Table 6-3	NA	Soil cover meets RAOs for direct contact, not migration to GW. Effectiveness should be clarified.
95	NA	Table 6-3	NA	What is Onsite Management- Immobilization?
96	NA	Table 6-3	NA	Beneficial Reuse can be on-site or off-site in Table 6-1, but unclear in Table 6-3 if on-site or off-site beneficial reuse.
97	NA	Table 6-4	NA	Reactive capping should be retained in order to provide a treatment technology as an alternative component. All other treatment technologies have been eliminated.
98	31-32	7.1	NA	NAPL recovery wells may be increased based on re-evaluation of locations eliminated. Need to add an alternative that includes targeted removal of BAP-TE in addition to other COCs that exceed PRGs.
99	31-32	7.1	Alt. 2, 3, 4	Update alternative components, as necessary, in response to comments including but not limited to migration to groundwater PRGs, inclusion of all COCs per media, and updated areas/volumes accounting for cumulative risk and depth of surface soil.
100	31-32	7.1	Alt. 2, 3, 4	Need a more thorough description of "beneficial reuse" of stockpile materials. Beneficial use of industrial byproducts is defined per NR 538. Reuse of stockpile materials must be in accordance with WAC NR 718.12 and 718.15.
101	31-32	7.1	Alt. 2, 3, 4	Alternatives need to include management and disposal of stockpile materials that do not meet the requirements for beneficial reuse.
102	31	7.1	Alt. 2	Long term monitoring needs to include MNA evaluation for Alternative 2.
103	31	7.1	Alt. 2, 3, 4	Specify proposed thickness and material components of soil cover.
104	31	7.1	Alt. 2, 3, 4	Soil cover alone may not be sufficient to meet migration to groundwater RAOs. An engineered cover may be required to meet migration to groundwater RAOs but was "eliminated" in Table 6-3.
105	31	7.1	Alt. 2	Alternative 2 includes a component for recovery of mobile NAPL from groundwater. The remedial action must also address principal threat waste (e.g., NAPL and tar blebs) in the vadose zone.
106	31-32	7.1	Alt. 2, 3, 4	NAPL, tar blebs, etc. are potential continuing sources of contamination in soil that pose a risk to groundwater and per the vapor intrusion pathway. Remedial action alternatives should address NAPL as principal threat waste.
107	31-32	7.1	Alt. 2, 3, 4	Each alternative requires a separate figure clearly depicting the various components of the alternative and areas requiring remediation.
108	31-32	7.1	Alt. 2, 3, 4	All alternatives require a component to include surface coal, coke, cinders, slag, clinkers scattered on the site surface and not associated with a stockpile for appropriate management. Reuse of these materials must be in accordance with WAC NR 718.15.
109	31-32	7.1	Alt. 2, 3, 4	The 2008 ATSDR Report provided as Appendix D to the RI concluded that ACM was present at the Site in various building materials, but only one area of visibly friable ACM was present and was recommended for immediate removal, which was performed prior to implementation of RI activities. However, ACM remains at the site. All alternatives require a component to address ACM in accordance with WAC NR 447.

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Comment Number	**Page**	**Report Section**	**Paragraph (if applicable)**	**Comment**
110	31-32	7.1	Alt. 2, 3, 4	Waste or contaminated soil may exist within or underlying the remaining infrastructure including remnants of buildings, smokestack, foundations, etc. Each alternative requires a component to characterize these structures and underlying soil and/or to remove them, as appropriate.
111	31-32	7.1	Alt. 3, 4	All alternatives with soil removal require confirmation sampling as a component of the alternative in accordance with WAC NR 724.
112	32	7.1	Alt. 4	Alternative 4 for soil states, "Targeted excavation of blue stained soil areas (Figure 4-5)." Figure 4-5 does not show the polygons around the blue-stained soil areas as part of the remedial areas.
113	33	7.2	Alt. 2, 3, 4	Each alternative requires a separate figure clearly depicting the various components of the alternative and areas requiring remediation.
114	33	7.2	Alt. 2, 3, 4	The alternative components currently include on-site CDF and/or off-site disposal. One-site CDF and off-site disposal components should be evaluated separately in different alternatives.
115	33	7.2	Alt 2, 3, 4	Sediment alternatives should include remedial options to address all sediment COCs, not just naphthalene.
116	33	7.2	Alt 2, 3, 4	Areas and volumes of contamination for sediment alternatives should be updated per previous comments regarding the sediment PRG/NOAEL calculation.
117	33	7.2	Alt 2, 3, 4	Areas and volumes of contamination for sediment alternatives should be updated per previous comments regarding the applicability of the PCA analysis.
118	33	7.2	NA	Is non-reactive capping as presented in Table 6-4 the same as engineered cap presented in the Alternatives?
119	33	7.2	NA	An alternative including reactive capping should be evaluated.
120	NA	Table B-1	NA	Include hot spots for all COCs exceeding construction worker PRGs. (see Appendix I of the HHRA).
121	NA	Table B-1 (new Table B-10)	Page 1 of 4 for Table B-10	Why is location CG-SB-109 listed twice?
122	NA	Attachment B-1	NA	What statistical program was used for the Spatial Bootstrap Model?
123	NA	Attachment B-1	NA	Per the first page of Attachment B-1, the text presents the initial two steps for the Model; however, the text does not reference tables or output sheets for these steps for the reader to reference. Please provide.
124	NA	Attachment B-1, Table B-1	NA	Please provide the post remedial action concentrations for all COCs.
125	NA	Table C-3	NA	Volume should be based on 4 feet.
126	NA	Table C-3	NA	Please define "Other fill material present" in a footnote to the table.
127	NA	Appendix D	NA	Remove Appendix D from the document in accordance with the transmittal letter for these comments.